

Notice of Allowability

Application No.

10/631,997

Examiner

Kevin M Bernatz

Applicant(s)

GILL, HARDAYAL SINGH

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to interview of 4/12/05.
2. ☒ The allowed claim(s) is/are 1-32.
3. ☒ The drawings filed on 30 July 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 04132005.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Dominic Kotab on April 12, 2005.

The application has been amended as follows:

- Claim 1, line 1: after "pinned area", the comma "," was replaced with the word "and";
 - Claim 1, line 1: after "free area", the following phrase was inserted:
"adjacent to each other in a track width direction";
 - Claim 1, line 2: before "a nanoconstricted", the word "and" was replaced with the word "wherein";
 - Claim 1, line 2: before "encompassing", the following phrase was inserted: "is defined as the area";
 - Claim 1, line 2: after "free areas", the following phrase was inserted: "at the junction of the pinned and free areas";
 - Claim 1, line 9: before "portion", the word "a" was replaced with the word "the";
 - Claim 1, line 10: the word "encompassing" was replaced with the word "within";

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- Claim 1, line 10: after “pinned area”, the following phrase was inserted:
“such that the magnetic moment of the first layer in the free area is free to rotate as magnetic fields are applied”;
- Claim 1, line 11: after “wherein”, the following phrase was inserted:
“said portions of the pinned and free areas within”;
- Claim 1, line 11: after “nanoconstricted area”, the word “has” was replaced with the word “have”;
- Claim 1, line 11: the phrase “areas immediately” was replaced with the phrase “the height of the portions of pinned and free areas”;
- Claim 12, line 1: after “pinned area”, the comma “,” was replaced with the word “and”;
 - Claim 12, line 1: after “free area”, the following phrase was inserted:
“adjacent to each other in a track width direction”;
 - Claim 12, line 2: before “a nanoconstricted”, the word “and” was replaced with the word “wherein”;
 - Claim 12, line 2: before “encompassing”, the following phrase was inserted: “is defined as the area”;
 - Claim 12, line 2: the word “greater” was deleted;
 - Claim 12, line 3: after “pinned area”, the following phrase was inserted:
“adjacent the junction of the pinned and free areas, wherein the nanoconstricted area encompasses a greater portion of the pinned area”;

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- Claim 12, line 9: after “nanoconstricted area”, the following phrase was inserted: “such that the magnetic moment of the first layer in the free area is free to rotate as magnetic fields are applied”;
- Claim 12, line 10: after “wherein”, the following phrase was inserted: “said portions of the pinned and free areas within”;
- Claim 12, line 10: after “nanoconstricted area”, the word “has” was replaced with the word “have”;
- Claim 12, line 10: the phrase “areas immediately” was replaced with the phrase “the height of the portions of pinned and free areas”;
- Claim 17, line 1: the dependency was changed from “claim 12” to “claim 1”;
- Claim 22, line 1: after “pinned area”, the comma “,” was replaced with the word “and”;
 - Claim 22, line 1: after “free area”, the following phrase was inserted: “adjacent to each other in a track width direction”;
 - Claim 22, line 2: before “a nanoconstricted”, the word “and” was replaced with the word “wherein”;
 - Claim 22, line 2: before “encompassing”, the following phrase was inserted: “is defined as the area”;
 - Claim 22, line 3: the word “greater” was deleted;
 - Claim 22, line 3: after “free area”, the following phrase was inserted: “adjacent the junction of the pinned and free areas, wherein the nanoconstricted area encompasses a greater portion of the free area”;

- Claim 22, line 9: after “pinned area”, the following phrase was inserted:
“such that the magnetic moment of the first layer in the free area is free to rotate as magnetic fields are applied”;
- Claim 22, line 10: after “wherein”, the following phrase was inserted:
“said portions of the pinned and free areas within”;
- Claim 22, line 10: after “nanoconstricted area”, the word “has” was replaced with the word “have”;
- Claim 22, line 10: the phrase “areas immediately” was replaced with the phrase “the height of the portions of pinned and free areas”; and
- Claim 28, line 1: the dependency was changed from “claim 22” to “claim 1”.

Reasons for Allowance

3. The present claims are deemed allowable over the references of record since the references of record fail to disclose or render obvious the claimed structural elements associated with the “nanoconstricted area”.

While the prior art of record as exemplified by Zheng et al. and Mack et al. disclose MR sensors having a exchange tab structure which is antiferromagnetically coupled to a portion of the free layer in the track width direction, none of the references of record disclose or render obvious a nanoconstricted area meeting applicants’ claimed structural limitations.

While Sharma discloses a MR sensor having a substantially identical “free area”, “pinned area” and “nanoconstricted area” as applicants when viewed in the track width x

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thickness plane, Sharma fails to teach or render obvious a nanoconstricted area meeting applicants' claimed height limitations, nor teach or render obvious the claimed invention prior to applicants' filing date.

Hasegawa et al. (U.S. Patent App. No. 2004/0141261 A1) disclose a MR sensor having a free area and a pinned area adjacent to each other in the track width direction, but fails to teach or render obvious a nanoconstricted area meeting applicants' claimed height limitations, nor teach or render obvious the claimed invention prior to applicants' filing date.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

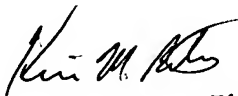
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
April 13, 2005


Kevin M. Bernatz, PhD
Primary Examiner